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ABSTRACT

Educational researchers have begun exploring teachers' beliefs and construction of knowledge through their use of metaphors. In this study, undergraduate (N=104) and graduate (N=102) education students were asked to respond to open-ended statements concerning what teachers, students, and classrooms were like. The subjects also responded to lists of similes for teachers, students, and classrooms by indicating on a Likert-type scale how often each simile was true. A comparison of the subject-generated similes with the simile-list responses suggested that the simile-list responses were valid reflections of the subjects' personal metaphors. A factor analysis of the similes generated interpretable constructs for understanding the relationships of similes and metaphors. Relationships between subject characteristics and similes and the caregiving construct were established. (Author/IAH)

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Examining Metaphors in Teaching Through the Use of Simile Lists

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Abstract

Educational researchers have begun exploring teachers beliefs and construction of knowledge through their use of metaphors. In this study undergraduate and graduate education students were asked to respond to open-ended statements concerning what teachers, students, and classrooms were like. The subjects also responded to lists of similes for teachers, students, and classrooms by indicating on a Likert-type scale how often each simile was true. A comparison of the subject generated similes with the simile list responses suggested that the simile list responses were valid reflections of the subjects' personal metaphors. A factor analysis of the similes generated interpretable constructs for understanding the relationships of similes and metaphors. Relationships between subject characteristics and similes and the Caregiving construct were established.

Examining Metaphors in Teaching Through the Use of Simile Lists

For Aristotle (1951), psychologists (Billow, 1977), and psychotherapists (Bryant, Katz, Becvar, & Becvar, 1988), the metaphor has held special meaning.

> Metaphors provide bold, rich, and distinctive windows on the world. They offer dynamic and dramatic views beyond the surface of things into their deeper significance. In everyday discourse they prompt less visible connections; in therapeutic work they access invaluable associations. Metaphors provide a route to profound understanding of experiences which defy description in literal or direct terms. (Fox, 1989, p. 233)

On the surface the metaphor appears to simply convey a comparison between two relatively independent subjects or events. However, the interpretation of a metaphor goes beyond simple comparison (for an in-depth discussion see Glucksberg, 1989; Glucksberg & Keysar, 1990). For example, the statement, "The children were angels," does not translate into a simple comparison of equal dimensions between the subjects. It may be interpreted to mean that there was some quality or aspect of the children that was the same as some quality or aspect of angels. However, the dimensions are not total or equal. Such that reversing the order may require a different interpretation, "The angels were children."

Therefore, metaphors are not simple comparisons, they are also interpretations, analyses and evaluations by an individual. When these metaphors are used within the personal context of an individual, they provide insights into the beliefs of the person. From a radically constructivist's perspective these beliefs are not just attitudes, they are the cognitions (see von Glasersfeld, 1988; Johnson, 1987; Lakoff, 1987; Lakoff & Johnson, 1980). They are the part of the internalized knowledge that an individual uses to understand his/her world.

The fact that personal metaphors can provide such insight into a person's understanding of the world is why psychologists and therapists have found metaphors to be useful tools in counseling (Angus & Rennie, 1989; Bryant, Katz, Becvar, & Becvar, 1988; Fox, 1989; Hallock, 1989). The identification and modification of client metaphors has served as a useful therapeutic technique. The potential for their use in education is just beginning to be realized.

Interest and research has increased in the area cognitions of teachers (Clark & Peterson, 1986). This interest is not confined to the static nature of thought and reflections, but emphasizes the dynamic aspects of cognitive experimenting and reflection-in-action (Schon 1983, 1987). Recently, Kenneth Tobin, Hugh Munby, and others have presented work involving metaphors in the construction of teacher knowledge. Teaching practices were explored through qualitative investigations using interviews and videotapes which reflected the myths and metaphors

of teachers. Metaphors have been found to influence how teachers think and talk about teaching (Tobin, Kahle, & Fraser, 1990). Teachers have been found to demonstrate practices consistent with the metaphors which they hold for teaching (Tobin, 1990, Tobin & Ulerick, 1989). Teachers develop multiple metaphors to meet their needs in understanding conflicts due to multiple roles (Tobin, 1990; Tobin & Jakubowski, 1990).

Researchers discovered that teachers have used a number of metaphors to describe themselves. Olson (1981) found teachers view themselves as a central authority. Provenzo, McCloskey, Kottkamp, and Cohn (1989) interviewed teachers that used teacher metaphors such as trainer or a nurturer of things that grow, anchor, preacher, brick layer, mother, counselor, doctor, and lawyer. Other researchers have found rejection of some metaphors (Munby & Russell, 1989, p. 4.), "I can't live with the word "coaching."

It has been suggested that understanding one's own metaphors can be a useful experience for teachers. Considering the ambiguous context of schools, it has been suggested that metaphors help teachers meet their need to clarify meaning in the midst of complexity (Provenzo, McClosky, Kottkamp, & Cohn, 1989). Kenneth Tobin has also found metaphors useful tools in understanding pedagogy (Tobin, 1990; Tobin & Jakubowski, 1990). Munby and Russell (1989, p. 1) have suggested that "it may be productive for all teachers to become students of metaphor, at least their own metaphors."

But how are these metaphors to be interpreted and compared? In an example described by Tobin (1990), not only did a teacher see herself as a dictator, the metaphors that she used for her students (e.g. robots) were consistent with her teacher metaphor. If professional action flows from clusters of thoughts (Schon, 1983), and if metaphors give meaning by helping to categorize (Bowers, 1980), then are there categories of metaphors? Are there consistent logical underlying constructs to different metaphors held for teachers, student, and classrooms? If there were we would have a more general base for understanding and interpretations.

This study attempts to answer the questions of underlying constructs in metaphors by quantitatively factor analyzing responses to a number of metaphors presented in the form of similes. First this study tested the hypothesis that metaphors, in the form of responses to similes on a list, were reflective of personal beliefs regarding teaching. Then these responses were analyzed to establish constructs which included similes for teachers, students, and classrooms. Subject generated similes not found on the list were then considered to determine if they could be categorized within the established constructs. This study also tested if subject characteristics led to differential responses to similes and constructs. Possible modifications and applications for use of similes lists were also considered.

Methods

Recently quantitative methods of investigating teachers' beliefs and attitudes have been criticized (Kagan, 1990; Munby, 1984). In particular, Munby (1984) cited two drawbacks to traditional quantitative approaches. The first criticism has to do with an instrument's sample representing a limitation to generalizations. The second criticism has to do with the fact that an instrument elicits a response to an item rather than allowing the subjects to present their own beliefs. With these criticisms in mind this study sought to explore the development of relatively stable general constructs for metaphors in teaching through quantitative methods.

Instrument

A paper and pencil instrument was developed to inventory beliefs regarding teachers, students, and classroom. The instrument sought to determine attitudes and beliefs through the use of metaphors. However, in order to avoid some of the interpretation problems inherent in metaphors, similes were used. The example mentioned earlier in the paper, "The angels were children," is an example of a figurative metaphor which, taken out of context, could quite easily be interpreted literally. Changing the metaphor to "The angels were childlike" or "The angels were like children" clarifies the interpretation. This allows for qualitative comparisons of the attributes of each, and

avoids literal interpretations which may be blindly accepted or rejected without evaluation.

The instrument was composed of two parts. The first part contained open-ended statements and the second part required responses using a Likert-type scale. The subjects were asked to not proceed to the second part until completing the open-ended statements. In the open-ended statements subjects were asked to complete each of the following statements twice:

1. A teacher is like a(n) _____.
2. A student is like a(n) _____.
3. A classroom is like a(n) _____.

The second part of the instrument presented the subjects with a number of choices for each of the statements and asked to indicate how often each choice was true. Such as:

A teacher is like a(n) _____.

boss	never	-	sometimes	-	often	- always
parent	never	-	sometimes	-	often	- always

Similes were presented for the teacher, student, and classroom. The subjects were also asked their gender, grade level taught or preparing to teach, and whether their present or anticipated teaching experience was more urban or suburban.

Subjects

The instrument was administered to undergraduate and graduate education students enrolled at a midwestern university during the summer of 1990. The 104 undergraduate students were

all in teacher preparation programs, and the 102 graduate students were all experienced teachers enrolled in masters programs. The average number of years of experience for the teachers was six. There were 153 females and 53 males.

Procedures

Acceptance of similes. The Likert-type scale following the similes was assigned the values: never (1), sometimes (2), often (3), and always (4). The means and standard deviations were calculated for each simile in the lists.

Validity of simile lists. In order to estimate the validity of the simile lists, the scores from the simile list words were matched with responses to the open-ended statements. Such that, if a respondent indicated that "a teacher is like a boss" in their open-ended statement response, then the value obtained from the "teacher is like a boss" scale from the simile list would be recorded. Means and standard deviations were calculated for each of the open-ended responses. It was hypothesized that if the simile list was a valid reflection of personal metaphors then the mean for the items identified through the open-ended statements would be significantly higher than the mean for any other simile presented in the lists. T-tests were used to compare the item means.

Relationships among similes. A factor analysis using a varimax rotation was performed to identify similar constructs among the individual similes in all of the categories of teacher,

student, and classroom. Items were included as a factor if it had factor loading of .35 or greater. Items with cross loadings were attributed to the factor with the higher loading (Gorsuch, 1983, p. 269).

Relationships between similes and subjects. The variables of gender, undergraduate or graduate student with teaching experience, grade level orientation, urban/suburban orientation were dummy coded with ones and zeros. These variables were entered into multiple regression equations with the individual similes and the factors serving as dependent variables. If the analysis of variance indicated that the equation accounted for a significant amount of variance, T-tests were conducted on the beta weights.

Results

Acceptance of Similes

Acceptance of the similes from the lists were based upon mean scores for each of the similes (see Table 1). None of the similes were considered to be "always" true. More of the teacher similes (7) fell within the "often" range than for the other categories. Four student similes fell within the "often" range, whereas only one classroom simile (community) was scored above 2.5.

Insert Table 1

about here

Validity of Simile Lists

Slightly less than half of the open-ended responses could be exactly matched with items from the simile lists (see Table 2). Some of the most often mentioned responses to the open-ended statement for teacher not presented in the simile list were role model, leader, motivator, mentor, babysitter, and artist. Some of the most often mentioned responses to the open-ended statement for student not presented in the simile list were follower, assistant, blank slate, empty vessel, and artwork. Some of the most often mentioned responses to the open-ended statement for the classroom not presented in the simile list were library or museum, lab or experiment, meeting place, and place of safety.

Of those matched in the teacher category, the first open-ended response was significantly higher ($p < .01$) than the top two items from the teacher simile list. The first open-ended response from the student list was higher ($p < .10$) than the top item and significantly higher than the second highest item ($p < .01$). The first open-ended response from the classroom list was significantly higher than the second highest item from that list, but not higher that the top item. The second entry for each open-ended statement was significantly higher the second highest

item from each list ($p < .05$) except the classroom list, but not significantly higher than the top rated item.

Insert Table 2

about here

Relationships among Similes

All of the similes from all of the categories were entered into a factor analysis. Interpretation of a scree plot of the eigen values indicated a nine factor solution. A forced nine factor solution using a varimax rotation was generated (see Table 3). Eight interpretable factors were generated. The ninth factor contained negative loadings for two teacher similes and the student simile "sheep".

Insert Table 3

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The first factor described the teacher as one possessing authority. This AUTHORITY factor included teacher similes of animal trainer, boss, enemy, judge, police officer, and prison warden. To compliment this student similes of wild animal, enemy, and pawn were included. The classroom in this construct was viewed as a battlefield and jungle.

The second factor described the teacher as a caregiver. The CAREGIVING factor included teacher similes related to family such as parent and brother/sister. It also included professional caregivers: counselor, doctor, and minister. The complimentary student similes of daughter/son, brother/sister, and patient were included. Caring environments such as home, hospital, church, and community were a part of the construct. The classroom simile of a sunny day was also part of this factor.

In the third factor the teacher was a producer or director of students who create something to be viewed or used. In this PRODUCTION factor the teacher similes of movie director and orchestra conductor appeared along with classroom similes of stage and concert. Classroom similes of factory, farm, and gameboard also loaded on this factor.

The fourth factor created a construct of confinement and powerlessness. The slave simile appeared for both the teacher and the student. Teacher as victim and student as prisoner loaded on this CAPTIVES factor. The classroom served as a prison, cage, or a fishbowl for those confined to it.

The fifth factor described an environment of fun with classroom similes of party, carnival, playground, and zoo. The teacher was viewed as a party host. However, the teacher simile of entertainer was not a salient item for this FUN factor. Therefore, it might be assumed that the teacher might have been viewed as one who creates an environment of fun, but not the center of attention.

The sixth factor placed the teacher on TRIAL and in the role of the student. The teacher as student was challenged by the student similes of a question, mountain, and obstacle. The student also served as the teacher and jury in the classroom as a courtroom.

Although the last two factors considered were more difficult to interpret, they held important concepts which should not be ignored. The seventh factor focused on the classroom as a BUSINESS with the students as workers. The teacher served as the referee, not the boss, in this construct. The student was emphasized in the eighth factor. The student as a sponge or a ball of clay represented a desire to be filled or take shape. However, the teacher was viewed as an advocate for this CHANGE process rather than a director.

Relationships between Similes and Subjects

The subject variables of gender, experience, grade level orientation, and urban/suburban orientation were found to be significant predictors of a number of the individual similes (see Tables 4 and 5). Gender served as a significant predictor of one teacher simile, two student similes, and one classroom simile. Females felt that a teacher was like a counselor more often than did males, students were more like an audience and less like sheep, and a classroom was more like a sunny day. Being a graduate student with teaching experience as opposed to an undergraduate student was a significant predictor of 11 similes.

The experienced teachers indicated that teachers were like advocates, doctors, ministers, and parents more often than did the teacher education students. They were also more likely to see students as daughters or sons and a classroom as a home, hospital, and a sunny day. Those subjects teaching or preparing to teach elementary students viewed teachers more often as a friend and parent and the classroom more often as a home than their secondary counterparts. Urban versus suburban orientation was not a significant predictor for any of the similes.

Insert Tables 4 and 5

about here

The subject variables of gender, experience, grade level orientation, and urban/suburban orientation were found to be significant predictors of only one of the factors. The CAREGIVING factor, which contained many of the individual similes cited above, had an R of .51 (see Tables 6 and 7). The experienced teachers/graduate students viewed teaching as caregiving more than the inexperienced/undergraduate students. Those with an elementary education orientation also viewed teaching as more of a caregiving activity.

Insert Tables 6 and 7

about here

Discussion

Validity of Simile Lists

In analyzing the interview statement from a teacher concerning her students, "They just sit back and take in information, hopefully, ... their minds are cleared of any thoughts that are blocking what they are supposed to be thinking about," Munby (1986, p. 198) identified the statement as a metaphor of the mind as a vessel. In the same study he stated that pieces of information such as the statement above can be accumulated to construct metaphorical figures that can be studied, even if the subject is unaware of the use of the metaphor. This study demonstrated that it is possible that the subjects are also capable of evaluating their beliefs through acceptance of presented metaphors.

The comparison of similes generated by the subjects matched with those in the simile lists suggested that, at least in the teacher and student categories, the subjects' responses to the simile lists did reflect their self-generated similes. Although about half of the responses to the open-ended statements did not appeared on the simile lists, they could have been included

within the constructs identified through the factor analysis. For example, teacher as a leader and student as a follower could fall within the Authority construct. Teacher as a babysitter and the classroom as a place of safety might fall within the Caregiver construct. Teacher as artist and student as artwork could fit within the Production construct. Whereas, teacher as motivator and mentor and student as a blank slate or empty vessel might fall within the Change construct.

Although the results were encouraging, it is obvious that some revision is in order. It would be impossible to include every possible simile for teaching, however, some of the open-ended responses need to be included in future lists. The inclusion of these similes is likely to lead to better results in the t-tests comparisons of open-ended responses and top simile list responses.

Relationships among similes

In 1990 Baker speculated that four metaphors might be used to describe schools and promote their improvement:

1. Factory-a disciplined production system
2. Family-a caring and supporting social system
3. Fair-a celebrating community of joy and excitement
4. Forum-a public meeting place of dialogue and inquiry

These four metaphors were quite similar to four of the eight constructs established by the factor analysis in this study. The similes of factory and farm loaded on the Production factor.

Teachers operating within this construct might see themselves as directing the production of knowledge through assignments or tasks. Family and support were key elements of the Caregiving factor. Teachers operating within this construct may feel a camaraderie or a parental need to protect and nurture their students. Teachers who feel that it is important for their students to enjoy school fall within the Fun construct. A clear cut "Forum" construct did not emerge, however, the highest rated factor, Change, did view teachers as advocates for their students transformation and absorption of information.

A few less positive constructs also emerged. The teacher who begins the school year by counting down the number of days until the end may feel that school is a shared prison and that the teacher and students are Captives. Some teachers may feel that school is a Trial where they must convince their students of something or in someway overcome them as a challenge. The most well established factor placed the teacher in a dominant position of power and Authority on a battlefield where the student was a pawn and the enemy.

These constructs can provide a reference point for interpreting behaviors and other metaphors in teaching. They serve as example-oriented constructs for comparison.

Relationships between similes and subjects

Differences among subjects were also explored in this study. In the past attitude differences regarding teaching practices

have been found based on gender, grade level, and years of experience (Marchant & Bowers, 1988). Many of the relationships between subject characteristics and metaphors in this study were somewhat predictable. The fact that experienced teachers, most of whom were older than the undergraduate students, viewed teaching more as Caregiving was probably related to their ability to view themselves as parents. Gender stereotypes may have been reflected in greater female support for teacher as a counselor and a classroom as a sunny day, whereas males were more likely to see students as sheep.

The ability to use the similes and factors to establish relationships with subject characteristics suggested that the simile lists may provide a useful tool in establishing differences among teachers. If current metaphors and beliefs can be determined in teachers and if desirable metaphors and beliefs can be identified then the true potential for the use of metaphors with teachers may be realized. In Greek "metaphor" means "change bearing".

Tobin and Jakubowski (1990, p. 8) asked, "Would the use of alternative metaphors result in desirable changes in classroom practices?" Schon has used the term "reframing" to describe the development of a new and different view or approach to an event. In reframing, an initial frame is changed in light of new information. To this end, metaphors are powerful tools for reframing (Munby & Russell, 1989). Tobin (1990) described a teacher who made a radical change in his teaching approach along

with his change in metaphors (from dictator to tour guide). Munby and Russell (1989) presented an example of one teacher who was able to reframe the implementation of classroom routine from a management problem to a learning problem.

Just as psychologists and counselors believe that there are healthier metaphors for their patients (Dolan, 1986), it might be assumed that there are preferable metaphors in teaching. Tobin (1990) has described the metaphor of school-as-a-work-place as permeating our traditional culture (Tobin, 1990). However, currently there is a great deal of interest in "learning oriented" or "process oriented" classrooms (Marshall, 1988). This might suggest that those who view the classroom as a workplace or the teacher as a boss might be well served in changing their orientation.

However, at this early stage in research on metaphors in teaching it is important to focus on an understanding of the relationship of various beliefs and metaphors, self-generated metaphors and responses to other-generated similes, and the relationship of these to other variables. This study developed a new means of exploring beliefs about teaching, it established constructs and relationships among similes, and made comparisons with other variables such as gender and grade level.

Some problems currently exist related to the use of simile list as a research methodology. Although responses to the lists did seem to reflect personal beliefs, it is possible that some of the responses were based on a general perceived acceptability of

a simile. The similes were not context specific. Although "always" and "never" are absolutes, "sometimes" and "often" are very relative and context free. Modification in form and substance of the instrument can lead to improvements, however, certain limitations will remain. However, this study demonstrated the utility of responses to simile lists as a means of exploring beliefs in teaching, and further study using this technique would be productive.

Conclusions

If one is to consider the criticisms of quantitative research on teachers' beliefs presented earlier and explore qualitative studies in this area, it is obvious that the richness, depth, and context specific information possible in qualitative studies cannot be matched by quick responses to a paper and pencil instrument. However, in an effort to identify generalizable stable constructs for comparisons there are benefits to quantitative approaches. This study suggested that responses to a list of similes did reflect personal beliefs. The study identified constructs which may be useful in further research in beliefs concerning teaching and in efforts to reframe teachers' belief systems. The study indicated that the use of simile lists holds potential as a productive research methodology, however, further development and revision is also needed.

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Table 1

Means and Standard Deviations for individual similes within the categories of teacher, student, and classroom

Teacher			Student			Classroom		
Simile	Mean	SD	Simile	Mean	SD	Simile	Mean	SD
Counselor	3.00	(.64)						
Parent	2.84	(.71)	Audience	2.84	(.69)			
Coach	2.84	(.63)	Sponge	2.71	(.84)			
Friend	2.81	(.77)	Ball of Clay	2.68	(.80)			
Advocate	2.60	(.68)	Worker	2.63	(.68)	Community	2.87	(.78)
Entertainer	2.60	(.69)						
Boss	2.54	(.75)						
Referee	2.45	(.58)	Friend	2.48	(.69)			
Judge	2.37	(.66)	Question	2.35	(.68)			
Student	2.26	(.90)	Teacher	2.34	(.74)			
Orchestra conductor	2.25	(.76)	Daughter/ son	2.31	(.70)			
Police officer	2.23	(.68)	Patient	2.15	(.62)	Home	2.44	(.79)
Movie director	2.13	(.74)	Jury	2.09	(.69)	Sunny day	2.43	(.71)
Doctor	2.06	(.63)	Mountain	2.08	(.73)	Stage	2.40	(.69)
Politician	2.04	(.70)	Sheep	1.92	(.70)	Business	2.36	(.64)
Brother/ sister	2.00	(.74)	Obstacle	1.90	(.71)	Test	2.21	(.58)
Party host	1.91	(.67)	Brother/ sister	1.82	(.67)	Gameboard	2.07	(.61)
Animal trainer	1.90	(.64)	Wild animal	1.79	(.57)	Concert	2.06	(.65)
Minister	1.89	(.73)	Pawn	1.62	(.65)	Courtroom	2.02	(.58)
Prisoner	1.78	(.69)	Enemy	1.55	(.57)	Factory	2.02	(.61)
Enemy	1.64	(.62)				Playground	1.98	(.49)
Victim	1.53	(.61)				Carnival	1.97	(.57)
						Zoo	1.96	(.61)
						Jungle	1.90	(.65)
						Fishbowl	1.88	(.71)
						Battlefield	1.88	(.63)
						Farm	1.87	(.65)
						Party	1.87	(.52)
Slave	1.48	(.65)	Prisoner	1.49	(.57)	Hospital	1.86	(.56)
			Slave	1.36	(.52)	Church	1.66	(.61)
						Cage	1.66	(.65)
						Prison	1.60	(.68)

Table 2

T-Tests comparing open-ended similes with highest and second highest mean similes from the simile list

Open-ended	n	Mean	SD	List Item	n	Mean	SD	T
Teacher								
1st entry	90	3.24	.71	Counselor	209	3.00	.64	2.92**
1st entry	90	3.24	.71	Parent	209	2.84	.70	4.52**
2nd entry	86	3.11	.67	Counselor	209	3.00	.64	1.26
2nd entry	86	3.11	.67	Parent	209	2.84	.70	3.00**
Student								
1st entry	117	2.97	.74	Audience	210	2.83	.69	1.66
1st entry	117	2.97	.74	Sponge	208	2.71	.83	2.82**
2nd entry	80	2.95	.72	Audience	210	2.83	.69	1.30
2nd entry	80	2.95	.72	Sponge	208	2.71	.83	2.28*
Classroom								
1st entry	96	2.79	.72	Community	208	2.87	.78	-.83
1st entry	96	2.79	.72	Home	208	2.44	.79	3.71**
2nd entry	81	2.62	.73	Community	208	2.87	.78	-2.49*
2nd entry	81	2.62	.73	Home	208	2.44	.79	1.75

Note. two-tailed test.
* = $p < .05$.
** = $p < .01$.

Table 3

Factor analysis with varimax rotation for all similes

Category / Simile	Factors 1	2
Teacher		
Animal trainer	.57	
Boss	.65	
Enemy	.57	
Judge	.54	
Police officer	.58	
Prison warden	.57	
Student		
Enemy	.55	
Pawn	.50	
Wild animal	.57	
Obstacle	.36*	
Classroom		
Battlefield	.48	
Jungle	.42	
Prison	.41*	
Cage	.40*	
Sunny day	-.39*	
Teacher		
Brother/Sister		.62
Counselor		.45
Doctor		.58
Friend		.51
Minister		.56
Parent		.54
Advocate		.40*
Student		
Brother/sister		.58
Daughter/son		.53
Friend		.40*
Patient		.35
Classroom		
Sunny day		.38
Church		.48
Community		.35
Home		.61
Hospital		.50

Table 3 (continued)

Factor analysis with varimax rotation for all similes

Category / Simile	Factors 3	4	5
Teacher			
Movie director	.76		
Orchestra conductor	.78		
Politician	.38		
Student			
Mountain	.39*		
Classroom			
Hospital	.44*		
Concert	.58		
Factory	.43		
Farm	.55		
Gameboard	.38		
Stage	.36		
Teacher			
Slave		.62	
Victim		.58	
Student			
Prisoner		.66	
Slave		.70	
Classroom			
Cage		.67	
Fishbowl		.37	
Prison		.69	
Teacher			
Party host			.52
Friend			.45*
Student			
Friend			.40*
Classroom			
Jungle			.40*
Carnival			.63
Party			.67
Playground			.62
Zoo			.64

Table 3 (continued)

Factor analysis with varimax rotation for all similes

Category / Simile	Factors 6	7	8	9
Teacher				
Student	.45			
Student				
Jury	.58			
Mountain	.57			
Obstacle	.40			
Question	.46			
Teacher	.58			
Classroom				
Courtroom	.45			
Test	.35*			
Teacher				
Referee		.39		
Student				
Audience		.40		
Worker		.59		
Classroom				
Business		.66		
Test		.45		
Teacher				
Advocate			.44	
Student				
Ball of clay			.62	
Sponge			.67	
Teacher				
Coach				-.59
Counselor				-.35
Student				
Sheep				.56

Note. Factor loadings less than .35 omitted for clarity.
* indicates items which cross load with higher loadings on another factor.

Table 4

Beta weights for multiple regressions with similes as dependent variables

Category / Simile / Variable	R / B	SE B	Beta	t	Sig of t
Teacher					
Advocate	.26				
Constant	2.498	.088		28.299	.000
Gender	1.144	.128	-.093	-1.124	.262
Experience	.305	.103	.225	2.959	.004
Grade level	-.026	.112	-.019	-.233	.816
Urban/Suburban	.039	.061	.049	.643	.521
Counselor	.29				
Constant	2.939	.082		35.651	.000
Gender	-.266	.120	-.181	-2.213	.028
Experience	.169	.097	.132	1.747	.083
Grade level	-.006	.105	-.005	-.056	.955
Urban/Suburban	.118	.117	.056	1.077	.239
Doctor	.24				
Constant	1.983	.081		24.356	.000
Gender	-.036	.119	-.025	-.305	.760
Experience	.259	.096	.207	2.714	.007
Grade level	-.115	.103	-.092	-1.110	.269
Urban/Suburban	.028	.056	.038	.494	.622
Friend	.32				
Constant	2.887	.098		29.490	.000
Gender	-.085	.143	-.048	-.594	.553
Experience	.242	.115	.157	2.104	.037
Grade level	-.394	.124	-.255	-3.170	.002
Urban/Suburban	.031	.068	.034	.452	.652
Minister	.35				
Constant	1.659	.091		18.287	.000
Gender	-.229	.132	-.138	-1.732	.085
Experience	.445	.106	.308	4.179	.000
Grade level	.109	.115	.075	.946	.345
Urban/Suburban	.039	.063	.045	.616	.539

Table 4 (continued)

Beta weights for multiple regressions with similes as dependent variables

Category / Simile / Variable	B	SE B	Beta	t	Sig of t
Parent R = .34					
Constant	2.940	.089		33.104	.000
Gender	-.247	.129	-.154	-1.912	.058
Experience	.234	.104	.166	2.247	.026
Grade level	-.262	.113	-.186	-2.319	.022
Urban/Suburban	-.055	.061	-.067	-.901	.369
Student					
Audience R = .28					
Constant	3.006	.089		33.724	.000
Gender	-.371	.130	-.234	-2.857	.005
Experience	-.174	.105	-.126	-1.667	.096
Grade level	-.045	.113	-.032	-.394	.694
Urban/Suburban	.081	.062	.099	1.314	.191
Daughter/Son R = .26					
Constant	2.274	.091		25.061	.000
Gender	-.187	.132	-.117	-1.416	.159
Experience	.243	.106	.173	2.279	.024
Grade level	-.117	.115	-.083	-1.012	.313
Urban/Suburban	.042	.063	.051	.670	.504
Sheep R = .27					
Constant	1.813	.090		20.062	.000
Gender	.333	.132	.208	2.533	.012
Experience	.151	.106	.108	1.428	.155
Grade level	.010	.115	.007	.086	.932
Urban/Suburban	-.153	.162	-.073	-1.006	.324

Table 4 (continued)

Beta weights for multiple regressions with similes as dependent variables

Category / Simile / Variable	R	B	SE B	Beta	t	Sig of t
Classroom						
Home	.41					
Constant		2.356	.097		24.391	.000
Gender		-.169	.141	.094	-1.202	.231
Experience		.487	.113	.309	4.296	.000
Grade level		-.288	.123	-.182	-2.344	.020
Urban/Suburban		.069	.067	.074	1.032	.304
Hospital	.33					
Constant		1.682	.071		23.669	.000
Gender		.105	.104	.082	1.012	.313
Experience		.371	.083	.330	4.450	.000
Grade level		-.084	.090	-.074	-.928	.355
Urban/Suburban		.012	.049	.019	.251	.802
Sunny day	.30					
Constant		2.438	.090		26.996	.000
Gender		-.350	.132	-.217	-2.660	.009
Experience		.219	.106	.155	2.063	.041
Grade level		-.058	.115	-.041	-.506	.614
Urban/Suburban		.017	.062	.021	.276	.783

Note. df = 4, 166.
R only reported for regressions with significant Fs of $p < .05$.

Table 5

Means and standard deviations for significant predictor variables from significant multiple regressions

Category					
Simile	Variable		n	Mean	SD
Teacher					
Advocate	Experience	Student	100	2.43	.61
		Teacher	97	2.75	.71
Counselor	Gender	Female	153	3.07	.64
		Male	52	2.79	.61
Doctor	Experience	Student	101	1.92	.63
		Teacher	97	2.19	.60
Friend	Experience	Student	101	2.68	.73
		Teacher	98	2.93	.79
	Grade level	Elem.	106	2.10	.65
		Second.	92	1.98	.59
Minister	Experience	Student	101	1.62	.65
		Teacher	98	2.09	.70
Parent	Experience	Student	102	2.71	.62
		Teacher	98	2.95	.75
	Grade level	Elemen.	106	2.99	.65
		Second.	94	2.66	.71
Student					
Audience	Gender	Female	153	2.93	.68
		Male	53	2.57	.67
Daugh/Son	Experience	Student	101	2.18	.67
		Teacher	98	2.44	.69
Sheep	Gender	Female	152	1.85	.69
		Male	51	2.16	.67
Classroom					
Home	Experience	Student	101	2.18	.78
		Teacher	97	2.68	.70
	Grade level	Elemen.	106	2.60	.80
		Second.	92	2.26	.72
Hospital	Experience	Student	101	1.67	.53
		Teacher	97	2.03	.53
Sunny day	Gender	Female	152	2.55	.73
		Male	51	2.14	.57
	Experience	Student	101	2.31	.70
		Teacher	96	2.56	.69

Table 6

Beta weights for multiple regressions with Caregiver factor as the dependent variable

Factor / Variable	R	B	SE B	Beta	T	Sig.
Caregiver	.51					.000
Constant		2.280	.046		49.304	.000
Gender		-.057	.066	-.068	-.870	.386
Experience		.321	.052	.439	6.177	.000
Grade level		-.149	.058	-.204	-2.579	.011
Urban/Suburban		-.106	.054	-.141	-1.963	.051

Note. *df* = 4, 166.

Equations for the other factors were not significant.

Table 7

Means and standard deviations for significant predictor variables from Caregiver factor multiple regressions

Factor	Variable		n	Mean	SD
Caregiver	Experience	Student	101	2.15	.31
		Teacher	96	2.43	.37
	Grade level	Elementary	106	2.36	.39
		Secondary	91	2.21	.34